

Research Brief



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USING FORMATIVE ASSESSMENT TO INCREASE LEARNING

AUTHOR: Douglas G. Wren, Ed.D., Assessment Specialist
Department of Research, Evaluation, and Assessment

OTHER CONTACT PERSON: Jared A. Cotton, Ed.D., Assistant Superintendent
Department of Research, Evaluation, and Assessment

ABSTRACT

This report summarizes recent educational research, which concluded that educators can improve achievement for all of their students through the correct application of formative assessment. Most activities in which teachers obtain information about student learning and use it to modify instruction can be considered formative assessment, but teachers might encounter several impediments to successfully implementing formative assessment with their students. This brief review of literature includes recommendations for overcoming obstacles and putting effective formative assessment into practice in the classroom.

*If you believe that adults make a difference in student achievement, you are right.
If you believe that adults are helpless bystanders while demographic
characteristics work their inexorable will on the academic lives of students, you
are right. Both of these statements become self-fulfilling prophecies.*

--Douglas Reeves (2006)

What Is Formative Assessment?

Most people who have taken an educational measurement class are probably familiar with the terms *formative assessment* and *summative assessment*. Although some might recall that formative assessment takes place during an instructional unit while summative assessment takes place at the end of the unit, the belief that timing is the key distinction between the two is erroneous. Regrettably, many educators don't know the most important difference between formative and summative assessment (Dixon & Williams, 2001). Test publishing companies have clouded the issue further by calling the benchmark and interim assessments they produce formative assessments, when in fact they tend to be used as short-term summative assessments (Redfield, Roeber, & Stiggins, 2008). In the era of No Child Left Behind (NCLB), formative assessment has frequently been seen merely as testing that is done often (S. Chappuis, 2005).

The vital distinction between formative assessment and summative assessment is related to the purpose of the assessment and how the results will be used (Chappuis & Chappuis, 2007-2008). While both types of

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assessment serve important purposes, summative assessment results are used to make a summary judgment. Two well-known examples of summative assessments are final exams and the Standards of Learning (SOL) tests. In contrast, formative assessment “delivers information *during* the learning process, *before* the summative assessment.” Popham (2006) stated that the results of formative assessments are used to “adjust—that is *form*—ongoing instruction and learning.” A comparison of some of the characteristics of formative assessment and summative assessment is shown in Table 1 below.

Benchmark assessments and other tests can be considered formative assessments, but only if they provide immediate feedback to teachers and are used to guide instruction for individuals or groups of students. Formative assessment is not limited to tests. One author’s list of formative assessment methods used by teachers to make “responsive changes in teaching and learning” were these traditional means: teacher observation, classroom discussion, and homework (Boston, 2002). However, simply employing these practices is not enough; the information must be used by the teacher “early enough in the decision-making process to influence student learning” (Stiggins & J. Chappuis, 2008).

Table 1
Characteristics of Formative and Summative Classroom Assessment

Characteristic	Formative Assessment	Summative Assessment
Purpose	Provide ongoing feedback to improve learning	Document student learning at the end of an instructional segment
Student Involvement	Encouraged	Discouraged
Student Motivation	Intrinsic, mastery-oriented	Extrinsic, performance-oriented
Teacher Role	To provide immediate, specific feedback and instructional correctives	To measure student learning and give grades
Assessment Techniques	Informal	Formal
Effect on Learning	Strong, positive, and long-lasting	Weak and fleeting

Adapted from McMillan, 2007.

Inside the Black Box: Obstacles to Learning

In 1998, Black and Wiliam published an analysis of research that has become the seminal work on formative assessment in teaching. The authors maintained that education policymakers view the classroom as a “black box,” where certain inputs are fed in and specific outputs, such as more knowledgeable students and higher test scores, are expected to come out. With little or no control over what is fed into the black box, the responsibility for producing the expected outcomes—what goes on inside the black box—rests firmly on the shoulders of teachers. This revelation is nothing new, and the challenge is even greater in the 21st century as stakeholders are demanding increased accountability from educators.

So how can teachers use formative assessment to benefit all of their students? Teachers must be willing to confront a number of obstacles when changing to a system of true formative assessment. First, some teachers may have to alter their beliefs about learning and the learning potential of their students. They must be willing to reject the transmission model, which asserts that when knowledge is conveyed effectively, student understanding will follow. There is an abundance of evidence that this model does not work. Most teachers accept that good teaching involves interaction, which is a prerequisite to formative assessment. Another belief that

obstructs achievement through formative assessment is when teachers make the assumption that each student has a fixed—rather than an untapped—potential for learning. Teachers who believe that “so-called ability is a complex of skills that can be learned” and are able to diagnose and tactfully treat both the cognitive and confidence problems of their students will be more likely to implement formative assessment successfully in their classrooms (Black & Wiliam, 1998).

Black and Wiliam (1998) mentioned other obstacles to learning related to assessment practices; some are modus operandi in many schools:

- Most tests encourage rote and superficial learning, despite the claim that educators want to develop higher-order thinking skills.
- Grades are overemphasized, while efforts to recognize student problems and provide useful advice to students are not emphasized enough.
- Presentation and quantity of work is stressed over its quality with respect to learning.
- The accumulation of grades is given a higher priority than the analysis of student work to determine learning needs.
- Assessment feedback often results in students being compared with each other, which sends them the message that they are in a competition.

Regarding assessment feedback, Payne (2003) pointed out that using tests to make “invidious comparisons” between students damages the student-teacher relationship as well as relationships among students.

Students frequently acquire bad habits and self-defeating attitudes as a result of the practices listed above. Black and Wiliam (1998) described the unfortunate consequences:

When the classroom culture focuses on rewards, “gold stars,” grades, or class ranking, then pupils look for ways to obtain the best marks rather than to improve their learning. One reported consequence is that, when they have any choice, pupils avoid difficult tasks.... many become reluctant to ask questions out of a fear of failure. Pupils who encounter difficulties are led to believe that they lack ability, and this belief leads them to attribute their difficulties to a defect in themselves.... they avoid investing effort in learning that can only lead to disappointment, and they try to build up their self-esteem in other ways.

Doing Formative Assessment Right

A requirement for implementing formative assessment successfully for all students is maintaining the right classroom atmosphere. The classroom culture must breed success instead of competition. The foundation for this culture is a belief by the teacher that all students are capable of achieving. In such a classroom, the information gleaned from quizzes, homework, class discussions—any type of assessment used for formative purposes—can make a difference to individual students if it is conveyed appropriately to them. Verbal and written communication should concentrate specifically on what is wrong with the student’s work and what can be done to make it better. Teachers have to keep in mind that the message should be more about improvement and less about evaluation. As Black and Wiliam (1998) put it, “feedback to any pupil should be about the particular qualities of his or her work, with advice on what he or she can do to improve, and should avoid comparisons with other pupils.”

As illustrated in Table 1 on the previous page, one of the differences between formative and summative assessment is the role that the teacher plays. While summative assessments will

always result in a grade or score, grading is not the focus of formative assessment. Chappuis and Chappuis (2007-2008) recommended using formative assessment on a daily basis, and asserted that formative assessment in its purest form involves “no final mark on the paper and no summative grade in the grade book.” Other researchers strongly endorse this recommendation (R. Butler, 1987; S. Butler, 2004). A follow-up article to the original Black and Wiliam article reported that “the giving of numerical scores or grades has a negative effect [on student learning], in that students ignore comments when marks are also given.... A numerical score or a grade does not tell students how to improve their work, so an opportunity to enhance their learning is lost” (Black, Harrison, Lee, Marshall, & Wiliam, 2004). In their research, these authors found that although there were concerns about ungraded work creating a negative backlash, there were no adverse reactions from administrators or parents. In fact, parents were able to focus more on children’s learning issues instead of becoming preoccupied with grades.

While writing constructive comments on students’ work will require more time and effort on the part of teachers, the return in terms of improved student achievement is worth the investment. To avoid being overwhelmed, teachers should spend more time on selected assignments and not grade every single piece of student work. In one study, teachers became more skilled at writing helpful comments to students as they gained experience in writing comments and shared examples of effective feedback with each other (Black, Harrison, Lee, Marshall, & Wiliam, 2004). The last word on commentary to students is this: “To be effective, feedback should cause thinking to take place.” Interestingly, many teachers found that the process of composing comments caused them to think as well; they began reassessing assignments and modified activities to eliminate tasks that did not involve higher-order thinking.

Best Practices in Formative Assessment

In addition to maintaining a classroom culture of success and providing students with constructive feedback, there are other techniques that teachers can employ to make formative assessment work. Veteran teachers won’t be surprised that these methods have been around awhile; nevertheless, they deserve to be revisited in the context of formative assessment.

Communicating Purposes and Learning Targets

Students cannot reach a specific learning goal unless they can identify the goal and understand what they need to do to achieve it (Black & Wiliam, 1998). It cannot be assumed that every student has this capability; many students “have become accustomed to receiving classroom teaching as an arbitrary sequence of exercises with no overarching rationale.” Teachers need to have a clear picture of the learning targets, objectives, or goals they are teaching, and they must communicate this information to their students in language that the students understand. Teachers have to be sure their students fully realize *why* they are participating in an activity and *what* they are supposed to be learning. To ensure understanding, students should share back their interpretation of the why and what of the learning activity. Like other components of formative assessment, facilitating the progression of students from passive observers to active participants in their own learning involves time and effort, especially for low achievers. Nevertheless, getting through to even one student could result in an epiphany and a more promising future for that individual.

Questioning

Anyone who has completed a teacher preparation program has heard the term *wait time*. Despite almost universal endorsement of wait time, Black and Wiliam (1998) asserted that questioning by teachers continues to be “often unproductive” because “teachers do not wait long enough to allow pupils to think out their answers.” Typically, teachers ask questions that can be answered quickly—if not by students, then by the teachers themselves. These tend to be knowledge questions that cater to the lowest level of thinking (Black, Harrison, Lee, Marshall, & Wiliam, 2004). An unintended consequence is that many students do not attempt to respond to such questions because the answer will be coming along shortly. As an alternative, teachers should craft questions that require students to use analysis and critical thinking instead of simple recall. Students should be told in advance that they will be given ample time to consider possible answers, and that they should not raise their hands—the teacher will randomly select students to respond to the questions. Teachers can also try other approaches, such as requiring students to:

- Discuss their answers in pairs or small groups.
- Vote on the best choice after being given alternative answers.
- Write down their responses and share them with a partner or the class.

Employing Self-Assessment and Peer Assessment

Although students are generally honest in assessing themselves and their work, the most difficult task teachers face when developing students’ self-assessment skills is getting them to think of learning as working to accomplish a given set of goals (Black, Harrison, Lee, Marshall, & Wiliam, 2004). Black and Wiliam (1998) referred to self-assessment as “an essential component of formative assessment,” explaining that “when anyone is trying to learn, feedback about the effort has three elements: recognition of the desired goal, evidence about present position, and some understanding of a way to close the gap between the two.” For students who have grasped the concept of how these three elements operate in their learning, peer assessment provides an added dimension to formative assessment in the classroom as students are evaluated in their own vernacular by someone other than a teacher (Sadler, 1998).

Using Summative Tests Formatively

Some educators choose to keep formative and summative assessments separate because of their different purposes and the “harmful influence that narrow, high-stakes summative tests can have on teaching” (Black, Harrison, Lee, Marshall, & Wiliam, 2004). However, in a supportive environment where students are able to move beyond the stigma of bad grades, summative assessment results can provide a positive learning opportunity. In using summative tests for formative purposes, teachers have used the following activities with their students:

- Using self-assessment, students can “traffic light” key vocabulary or topics to indicate areas in which their understanding is high (green), partial (yellow), or low (red) in order to plan for review or revision.
- After self-assessing, students can be divided into discussion groups that concentrate on specific areas of concern.
- As an alternative to conventional study methods, students can generate their own test questions and answers to revisit topics where understanding is limited or to prepare for future exams.

Summary

Black and Wiliam (1998) considered assessment to be any activity that provides feedback with the potential to modify teaching. The assessment becomes formative “when the evidence is actually used to adapt the teaching to meet student needs.” Consistent with this definition, formative assessment comes in many forms—classwork, homework, quizzes, class discussions, teacher observation, question and answer sessions, projects, performance assessments, simulations, and student conferences—but the feedback or information from the activity must be used to enhance individual student learning. The evidence from research confirms that when implemented appropriately, formative assessment can be a powerful tool for increasing student achievement.

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